

Fun-dah-mentals for Energy Managers

The Big Picture

Why a Federal Energy Program and
what are some key components?

Please be courteous to our speakers

*Turn off all cell phones
and
Set pagers to vibrate*



(Phasers will be set to stun)



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INTERESTING FACTS

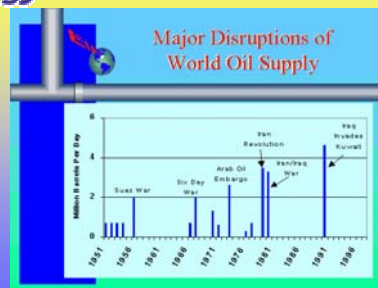
- Standard US Rail Gage 4.708 FEET
- Letters in the Hawaiian alphabet 12
- Hours in the day 24
- Beers in a case (coincidence?) 24
- TOTAL 64.708*

* All accurate and factual – but does the total make sense?

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- 1960s Mil Dept.s' initiatives - Facilities energy cost reduction
- 1974 first Oil embargo
 - Pres. Nixon issued Ex. O. - 7% Federal energy use reduction
- 1975 Energy Conservation Policy Act
- 1977 Ex. O. 12003 - 20% BTU/FT² facility goal (1975 - 1985)
- 1978 second oil embargo
 - National Energy Conservation Policy Act
- 1986 DoD set FY1985-1995 goal of add'l. 10%
- 1988 Fed. Energy Management Improvement Act (10% goal)
- 1990 Ex. O. 12759 goal of 20% BTU/FT² (FY1985-2000)

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- 1992 Energy Policy Act
 - 10% BTU/FT² reduction goal (FY1985-1995)
 - 20% BTU/FT² reduction goal (FY1985-2000)
 - (incl. ESPC authority and UESC encouragement)
- 1994 Ex. O. 12902
 - 30% BTU/FT² reduction goal (FY1985-2005)
 - 20% Industrial Energy Efficiency Improvement
- 1996 New Congress cut agencies energy appropriations
- 1999 Ex. O. 13123
 - 35% BTU/FT² reduction goal (FY1985-2005)
 - 25% Industrial Energy Efficiency Improvement
- 2001 National Energy Plan – “Reliable, Affordable, Environmentally Sound Energy for America's Future”
- 2002 Continuing Congressional emphasis – HR 4 Comprehensive Energy Bill

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Recent History

- House H.R. 6 4/7/03
- Senate S. 14 4/30/03
- House passes H.R. 6 to Senate 4/11/03
- Senate substitutes S. 517 into H.R. 6 and asks for Conference
- Conference Committee Chair says they will completely rewrite the bill.

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Federal Interest? “non-controversial” Issues

- Revised Goals – 2000 new baseline
 - 2% a year starting in 2004 to 2013 (20%)
- Energy Measurement and Accountability
 - by 2010 all buildings metered or sub-metered (within reason)
- Federal new building standards – 30% below IEC Code
- ESPC Sunset repealed + water added, new buildings add.
- Procurement of Energy Efficiency Products
- Federal Energy Bank

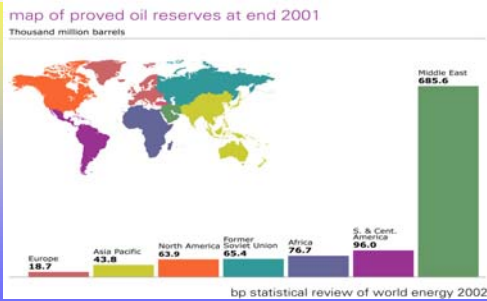
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Global Petroleum



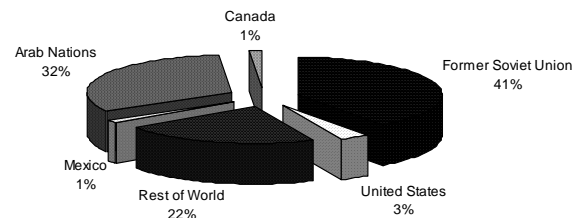
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Global Natural Gas Reserves Global Natural Gas



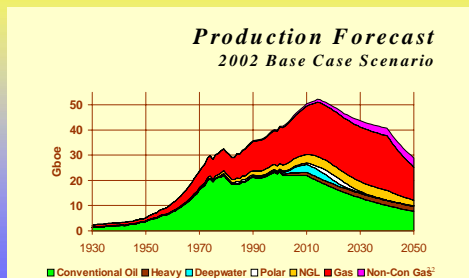
Source: Energy Information Administration, International Energy Outlook 1997
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Crystal Ball Time



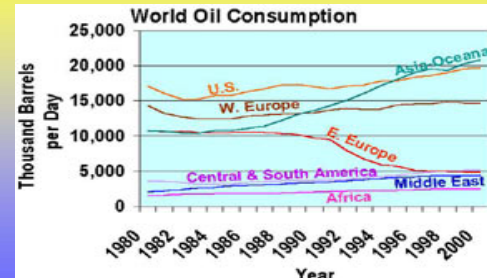
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Some Other Trends



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Alternatively Fueled Vehicle



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Root Causes of Federal Energy Program?

- Cost effective facilities management is a low priority for all agencies - it's just not "mission essential"
- All levels of government focus on short-term optimization
- Organizations fixate on the crisis-du-jour
- Facilities budgets historically have fostered -
 - Lowest first cost
 - Maximum new square footage rather than life cycle cost
 - Break-down maintenance
- No incentives or clear responsibilities for good facilities management
- Result = Insurmountable Opportunities

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Continuing Constraints

- In-house energy project identification expertise is limited
- In-house engineering and design talent is limited
- In-house operations and maintenance is limited
- In-house management span attention is limited (the lack of adequate resource allocation to intelligent facility management was the root of the basic in-efficiency)
- Congress is a fickle friend in the best of times
- Roller-coaster of program support and resources led to program inefficiencies

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What's a Poor Energy Manager to Do?

- Increased in-house effort
- Use of Alternately Financed Options
- Get Help

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Appropriated Funds and In-house Personnel - Pros

- Funds spent as available
- Lowest interest rate on borrowed money
- No profit to be paid
- In-house personnel rates considered low
- Existing knowledge of buildings and systems
- Standard design-bid-build process is relatively uncomplicated
- Continuing personnel awareness programs really work

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Cons

- Appropriated funds are inadequate to meet objectives
e.g. DoD needs \$285 M per year - \$69 M in FY04
- Force reduction has significantly reduced technical expertise
- Conservation “does not compete well” with mission
- Maintenance often on breakdown basis - even new systems
- There is little incentive for long term cost-effective focus
- Wait for limited appropriated funds results in significant

Lost savings ?

- \$1 billion per year = \$2.7 million per day = \$113,000 per hour
- = 23 taxpayers average annual payment per hour of delay

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Available Alternatives

- Utility Company Incentive Programs offered to all customers
- Energy Savings Performance Contracts
- Enhanced Use Leasing
- Each have their individual pros and cons - but:
- Alternatively financed mechanisms allow the government to access resources (money and expertise) to accomplish savings and benefits that can not be attained otherwise.
- In most cases alternative financing is more cost effective due to the lost savings from delay in the “normal” process and continual operations and maintenance = savings persistence.

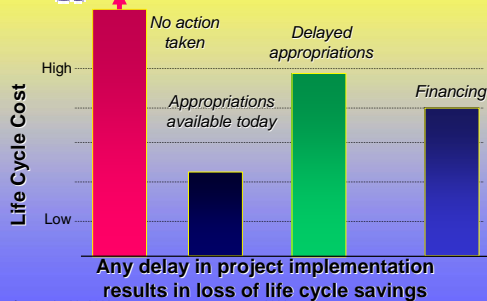
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The Cost of Delaying a Project



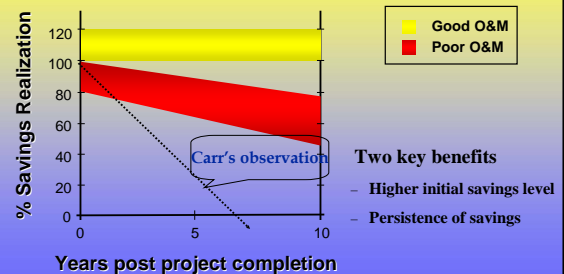
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Additional REAL Benefits from Alternative Financing



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Utility Incentive Programs Evolution

- 1980 Rebates and Incentives - DSM
- 1987 Demand Side Management bidding
 - approx 30 utility companies in 14 states
 - an alternative to plant construction
- 1990s Customized Programs
 - GSA Area-wide contract Attachments
 - Basic Ordering Agreements
 - Agency Model Agreements
 - Site-specific Agreements

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UESC LESSONS LEARNED

- Financing is not business as usual for Federal folks
- Understanding Financing Terms
- Financial Market Fluctuations
- Ten Ways to Lower Perceived Risk and Rates
- Using Annual Payments to Reduce Total Interest
- Recommended Buy Down/Buy Out Approaches
- Minimizing Prepayment Costs
- Prepayment Formula Clause
- www.eren.doe.gov/femp/utility/lessons_learned.html
- Competition Between Franchised Utilities
- Water Conservation Best Practices

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Energy Savings Performance Contracts

- DoD experience with Shared Energy Savings Contracts
- Individual ESPCs can take years
 - e.g. DOE Forrestal RFP issued in 1990 - project in place in 1994
 - Approximately 40 individual ESPCs in 10 years of authority
- Regional IDIQ competitively selected ESCOs
 - agencies/ facilities can negotiate delivery orders
- DOE - Western, Southeast, Central/Midwest, Northeast/MidAtlantic
 - Technical specific, e.g. Concentrated Solar, P.V., GeoHP, Biomass
- Army
- Air Force

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ESPC Lessons Learned

- IDIQs and standard formats make it much easier
- The Measurement and Verification Protocol is vital
 - www.eere.energy.gov/femp/financing/espc/measguide.html
- There is lots of effort to make it easier and reduce risk, and help is available
 - www.eere.energy.gov/femp/financealt.html

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Choosing the Appropriate Alternative

Form an Acquisition Team of All Interested Parties

1. Define Project Goals and Objectives
2. Identify Site-Specific Constraints
3. Estimate the Potential Energy Savings
4. Compare and Evaluate the Funding Options
5. Consider the Site Resources Required
6. Consider the Allocation of Responsibilities
7. Select a Financing Method

Document the Decision Process

www.eren.doe.gov/femp/utility/finance_option.html

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The Key to Success is a Different Attitude

Financing is a Partnership - working together
Communicate with each other

- Make all expectations clear from day one
- Make sure all are part of the party
- Make sure all information is shared
- Make sure all problems are shared
- Identify whose responsible for what - when
- Try to see it from the other guys viewpoint
- Establish reasonable and meaningful performance verification measures

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Partnerships Work



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Program Lessons Learned

Energy Champion is critical

All parties should be involved from the beginning, and be comfortable with the process

Partnership formation is critical

POA&M with responsibilities is critical

The Devil is in the Details

Experience is the best teacher - get help from someone who has done it.

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Lots of Help is Available

- DOE FEMP is the fount
www.eere.energy.gov/femp/
 - Training, Products, Resources, Detailed Technical Information, Advice, and Assistance
 - Regional Offices, National Labs, Project Facilitators, Contractors
- A full range of program and project support**

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Private Sector Help

- Utility Companies
- ESCOs
- GSA Schedule Contractors
<http://www.fss.gsa.gov/schedules>
- *871-200 - Energy Management Program Support*
 - Energy planning and strategies,
 - Energy choice analysis,
 - Risk management,
 - Metering services,
 - Billing and management oversight, and
 - Preparing statements of work.
- *871-201 - Energy Audit Services*
 - Energy audits,
 - Resource efficiency management,
 - Use of alternative energy sources, and
 - Building commissioning services.

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The truth is Time Dependant, so keep asking questions.

Questions? Comments?

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